

CLAIMS

1. A fiber-reinforced heat-resistant sound-absorbing material comprising a fiber preform made of silicon carbide short fibers having heat resistance of 1000°C or greater and a heat resistant compound having heat resistance of 1000°C or greater and applied onto the surface of said fibers; and having a porosity of 90% or greater.

2. The fiber-reinforced heat-resistant sound-absorbing material according to Claim 1, which has a bulk density of 0.07 g/cm³ or greater but not greater than 0.11 g/cm³.

3. The fiber-reinforced heat-resistant sound-absorbing material according to Claim 1, wherein the silicon carbide fibers contain a metal element which is selected from the class consisting of Group II, III and IV metal atoms of the periodic table and in which a temperature at which a free energy change in the carbon reduction reaction of the oxide of the metal element becomes a negative value is higher than a temperature at which a free energy change in the carbon reduction reaction of silicon oxide becomes a negative value; and have an oxygen content falling within a range of from 1 to 13 wt.%.

4. The fiber-reinforced heat-resistant sound-absorbing material according to Claim 1, wherein the heat-resistant compound is a BaO·Al₂O₃·SiO₂·MgO oxide represented by BaMg₂Al₆Si₉O₃₀.

5. A process for producing a fiber-reinforced heat-

resistant sound-absorbing material, which comprises a preform formation step of forming a fiber preform made of silicon carbide short fibers having heat resistance of 1000°C or greater; a sol-gel solution preparation step of
5 preparing a sol-gel solution containing a heat resistant compound having heat resistance of 1000°C or greater; an impregnation-drying-calcination step of impregnating the fiber preform with the sol-gel solution, followed by drying and calcining; and a crystallization step of crystallizing
10 the fiber preform after impregnation, drying and calcination.

6. The production process of the fiber-reinforced heat-resistant sound-absorbing material according to Claim 5, wherein in the impregnation-drying-calcination step,
15 impregnation, drying and calcination are repeated until the material has a bulk density of 0.07 g/cm³ or greater but not greater than 0.11 g/cm³.

7. The production process of the fiber-reinforced heat-resistant sound-absorbing material according to Claim
20 5, wherein the silicon carbide fibers contain a metal element which is selected from the class consisting of Group II, III and IV metal atoms of the periodic table and in which a temperature at which a free energy change in the carbon reduction reaction of the oxide of the metal element
25 becomes a negative value is higher than a temperature at which a free energy change in the carbon reduction reaction of silicon oxide becomes a negative value; and have an

oxygen content falling within a range of from 1 to 13 wt.%.

8. The production process of the fiber-reinforced heat-resistant sound-absorbing material according to Claim 5, wherein the sol-gel solution is a solution in which Ba, Al, Si and Mg ions or molecules or complex ions containing, in the structure thereof, said elements have been dissolved or dispersed at a weight ratio permitting precipitation of barium osumilite crystals at the time of the crystallization treatment.